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EXAMINER	
MURPHY, DILLON J	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/942,995	TOKUNAGA ET AL.	
	Examiner	Art Unit	
	Dillon J. Murphy	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

DOUGLAS Q. TRAN
PRIMARY EXAMINER

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- This action is responsive to the amendment filed on September 28, 2005.
- Claims 1-22 are pending. Claims 18-22 are new.
- Amendments to the drawings and the specification are acknowledged and accepted.

Claim Rejections - 35 USC § 112

Applicant's arguments are convincing and the 35 U.S.C 112 (2) rejection of claim 8 has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 13, 14, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630), and Gasper et al. (U.S. 5,919,730), hereafter referred to as Zhang and Gasper.

Regarding claim 1, Zhang teaches an invisible information recording method comprising:

Extracting a location of at least one blank area of a page image of a sheet of paper, wherein said location of said at least one blank area is different from a location of an image (Zhang, fig 1, print control symbol #214 separate from informational content #210. Informational content is visible to the naked eye), which is visible to the naked eye, of said page image of said sheet of paper (Zhang, col 4, ln 53-60, wherein blank portions of document are extracted from page, with location separated from the informational content of the printed matter); and

Recording a digital image on said location of said at least one blank area on said sheet of paper (Zhang, fig 1, print control symbol #214, i.e. digital image, is recorded in said location on the page).

Although Zhang teaches sizing the information such that it is not apparent to a viewer (Zhang, col 3, ln 25-32), Zhang does not disclose expressly an invisible information recording method wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to the naked eye. Gasper, however, discloses a method of invisible information recording wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to the naked eye (Figure 1a, #16, microdot).

Zhang and Gasper are combinable because they are from a similar field of endeavor of recording information on a page such that it is impossible for a casual observer to detect the information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine method of Gasper comprising

recording invisible information with pixel size and image density invisible to the naked eye with the invisible information recording method Zhang comprising extracting a blank area from a document separate from a visible image and recording an invisible digital image in said location. The motivation for doing so would have been to maintain the high quality and utility of the document (Gasper, column 3, lines 59-62), as well as to encode information concerning the printed matter, such as sequencing information (Zhang, col 3, ln 59-62). Therefore, it would have been obvious to combine Gasper with Zhang to obtain the invention as specified in claim 1.

With regard to claim 2, which depends from claim 1, the combination of Zhang and Gasper further teaches a method wherein each of the pixels so sized as to be invisible to the naked eye is 75 micrometers or less in diameter (preferred size of Gasper to be between 10 and 300 microns, column 6, lines 55-59).

With regard to claim 3, which depends from claim 2, the combination of Zhang and Gasper teaches further that each of the pixels so sized as to be invisible to the naked eye corresponds to one or a plurality of image forming elements used for a device for forming a digital image (Gasper, invisible pixels corresponding to one or a plurality of image forming elements used for a device for forming a digital image, Figure 1, and Figure 1A, microdots correspond to digital images).

With regard to claim 4, which depends from claim 1, the combination of Zhang and Gasper teaches each of the pixels so sized as to be invisible to the naked eye is printed using a yellow color developer (Gasper, col 7, ln 61-66, preferred color of pixels to be yellow in color).

With regard to claim 5, the combination of Zhang and Gasper teaches the yellow color developer is formed of ink or toner (Gasper, col 9, ln 19-21).

With regard to claim 13, which depends from claim 1, the combination of Zhang and Gasper teaches a method wherein such information formed by coarsely distributing the pixels each so sized as to be invisible to the naked eye so as to have a print density invisible to the naked eye is recorded into a plurality of locations on one page of a digital image (Gasper, column 6, lines 5-7. See also Zhang, col 2, ln 34-44, wherein the identification pattern includes a plurality of locations that are selected to identify the medium).

With regard to claim 14, the combination of Zhang and Gasper teaches a recording apparatus for recording invisible information on a sheet of paper according to any one of claims 1 to 11 (Gasper, col 8, ln 53-58, teaching a recording device for recording the information on a sheet of paper, and fig 2 showing a scanner (22), a digital image processing unit (24) comprising of a keyboard (26) and monitor (28), and a printer (30) to form hard copy prints. See also Zhang, col 15, ln 40-48, and fig 6, printers #348, wherein printers are described and shown for imprinting invisible information on printed matter).

Regarding claim 18, which depends from claim 1, the combination of Zhang and Gasper teaches an invisible information recording method wherein said recording the digital image comprises recording the digital image only in said at least one blank area of said page image of said sheet of paper (Zhang, col 4, ln 53-60, wherein area allocated for printing invisible information is spatially separated from the informational

content of the printed matter, i.e. the invisible information is printed only in a blank area of the page).

Regarding claim 19, which depends from claim 1, the combination of Zhang and Gasper teaches an invisible information recording method wherein said information comprises at least one of a horizontal arrangement and a vertical arrangement in said at least one blank area of said page image of said sheet of paper (Zhang, col 10, ln 61-64, wherein the invisible information may be encoded in a rectangular M x N fashion, allowing for both horizontal or vertical arrangement. See also table III of Zhang, col 11, wherein various horizontal and vertical arrangements are shown).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630), Gasper et al. (U.S. 5,919,730), Bouldin et al. (US 4837134), and Dickerson et al. (US 5633126), hereafter referred to as Zhang, Gasper, Bouldin, and Dickerson.

Regarding claim 8, which depends from claim 2, the combination of Zhang and Gasper teaches an invisible information recording method comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be 75 micrometers or less and at a print density invisible to the naked eye, as explained above in the rejection of claim 2. The combination of Zhang and Gasper does not teach an invisible information recording method wherein a print density invisible to the naked eye is such that the pixels each so sized as to be invisible

to the naked eye are coarsely distributed and an image density is 0.1 or less. Bouldin, however, teaches an invisible information recording method wherein a print density invisible to the naked eye is such that the pixels each so sized as to be invisible to the naked eye are coarsely distributed and an image density is 0.1 or less (Bouldin, col 5, ln 39-43, and fig 2, pixel elements #18 and #19, wherein the pixel density of the encoded information is less than 0.1).

Zhang, Gasper, and Bouldin are combinable because they are from a similar field of endeavor of encoding information invisible to the naked eye. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Bouldin comprising encoding information with an image density less than 0.1 with the method of invisible information recording of the combination of Zhang and Gasper comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be 75 micrometers or less and at a print density invisible to the naked eye. The motivation for doing so was suggested by Dickerson, who also encodes information at an image density less than 0.1. By encoding information at an image density, it is possible to provide a digital image such that the image is substantially colorless to the eye (Dickerson, col 16, ln 10-11). Therefore it would have been obvious to combine Bouldin as per the teaching of Dickerson with the aforementioned combination of Zhang and Gasper to obtain the invention as specified in claim 8.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630), Gasper et al. (U.S. 5,919,730), and Yano et al. (U.S. 6,035,308), hereafter referred to as Zhang, Gasper, and Yano.

Regarding claim 6, which depends from claim 1, and claim 7, which depends from claim 6, the combination of Zhang and Gasper teaches an invisible information recording method comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to a naked eye, as explained above in the rejection of claim 1. The combination of Zhang and Gasper does not disclose expressly an invisible information recording method wherein the invisible information is printed using an ultraviolet rays color developer, ink or toner. Regarding claim 6, Yano teaches the embedding of information in a document using an ultraviolet color rays developer, and regarding claim 7, Yano teaches the specific use of ink or toner (Yano, col 33, ln 53-63).

Zhang, Gasper and Yano are combinable because they are from the same field of endeavor of printing and embedding information on a page and linking the embedded information. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Zhang and Gasper to include the use of an ultraviolet color rays developer, ink or toner as suggested by Yano in order to increase the quantity of information stored within a document without restriction due to character size, or without displeasing the reader (Yano, col 3, ln 39-44). Therefore, it would have

been obvious to combine Yano with the aforementioned combination of Zhang and Gasper to obtain the invention as specified in claims 6 and 7.

Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630), Gasper et al. (U.S. 5,919,730), and Cass et al. (U.S. 5,946,414), hereafter referred to as Zhang, Gasper, and Cass. As previously mentioned, the combination of Zhang and Gasper teaches an invisible information recording method comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to a naked eye. Also, Gasper teaches the arrangement of the microdots into a pattern or array (Gasper, col 6, ln 60-67) and Zhang also teaches the structuring of the grouping (Zhang, fig 1), but does not disclose the specific details of the grouping.

With regard to claim 9, which depends from claim 1, the combination of Zhang and Gasper fails to teach an invisible information recording method where 16 image-forming elements is a recording unit. In the information recording method taught by Cass, "signal blocks," i.e. "recording units," are used as the base of encoding information. The "signal blocks" of Cass consist of a varying number of "color cells," consisting of "printer cells," i.e. pixels, which are the smallest unit of the absence or presence of a mark on a printed medium (Cass, col 14, ln 59-63). Choosing K, the number of "color cells" in a "signal block", equal to 1, defines a "signal block" consisting of 16 "printer cells." Thus the "signal block" with one "color cell" (Cass, Figure 48, #344)

is formed with 16 "printer cells" (Cass, Figure 48, #342). In this manner the method of forming "signal blocks" is identical to forming "recording units."

With regard to claim 10, which depends from claim 9, Cass teaches a method of pattern-based encoding, where "signal blocks," i.e. recording units, can stand alone or they can be further grouped together to express a message in a "message image" (Cass, Figure 14, #675). In one embodiment, Cass uses a 1-Dimensional array to encode a message (Cass, col 18, ln 62-64). The message of Cass is not limited in length, and may have a length of six units (Cass, col 15, ln 40-49). Thus, a "message image," i.e. a "significant block," consists of six "signal blocks," i.e. "recording units." In this manner the method of forming a "message image" is identical to forming a "significant block."

With regard to claim 11, which depends from claim 10, Cass teaches the encoding of "signal blocks," i.e. "recording unit," to represent "1" in a "message image," i.e. a "significant block" (Cass, column 18, lines 60-62. It is well known in the art that a complete signal always comprises a "1." Additionally, see Zhang, col 6, ln 65-67, wherein a "framing bit" is always a "1." Also see Zhang, col 7, ln 3-7, wherein an odd parity check is used for error detection, requiring at least one element to be a "1.")

Zhang, Gasper, and Cass are combinable because they are from a similar problem solving area of encoding information on a media in a manner that is invisible to the naked eye. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the patterned and rectangular arrangement of microdots in the combination of Zhang and Gasper to include the specific use of the "recording unit" and

"significant block," and to use "recording units" to represent a "1" in a "significant block" to reliably encode information at a high density rate in an image (Cass, column 6, lines 42-44). As per the teaching of Zhang recording invisible information on a blank area on a medium, it would have been obvious at the time of the invention to apply the encoding techniques of Cass to a digital image separate from the visible image on the medium. The motivation for doing so would have been to encode information in a document to provide each document with a unique "signature" to distinguish one document from others (Gasper, col 8, ln 15-18), as well as to define a print-control region, i.e. to define invisible information on a page, to aide in the detection of the information by providing a framing bit at the first corner of the region (Zhang, col 2, ln 53-58). Therefore, it would have been obvious to combine Cass the aforementioned combination of Zhang and Gasper to obtain the invention as specified in claims 9, 10, and 11.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630), Gasper et al. (U.S. 5,919,730) and Cass et al. (U.S. 5,946,414) as applied to claim 10 above, and further in view of Hayashi et al. (US 2003/0161496 A1), hereafter referred to as Zhang, Gasper, Cass, and Hayashi.

Regarding claim 12, which depends from claim 10, the combination of Zhang, Gasper, and Cass teaches an invisible information recording method comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to

a naked eye, wherein each print density invisible to a naked eye is such that 16 pixels grouped together is a recording unit, and wherein 6 adjacent recording blocks form one significant block, and wherein at least one of the significant blocks comprises a recording unit which always represents a "1," as explained above in the rejection of claim 10. The combination of Zhang, Gasper, and Cass does not disclose expressly an invisible information recording method wherein at least one of the significant blocks comprises a recording unit representative of a parity check. Hayashi, however, teaches a method of invisible information recording using parity bits in an embedded digital watermark (page 9, paragraph #219).

Hayashi teaches an arrangement of the grid based encoded information with parity check (Hayashi, fig 21B). Hayashi also teaches parity bits, P1-P16, embedded in the digital watermark for error correction (Hayashi, fig 21B, see also paragraph #219).

Zhang, Gasper, Cass, and Hayashi are combinable because they are from a similar problem solving area of printing and encoding information reliably as watermarks or pixels on a paper. At the time of invention, it would have been obvious to one of ordinary skill in the art to modify the combination of Zhang and Gasper to include the use of the recording unit and significant block, and to use recording units to represent a "1" to reliably encode information at a high density rate in an image, as suggested by Cass, and to provide each document with a unique signature as suggested by Gasper. Furthermore, it would have been obvious to combine the parity check as suggested by Hayashi to the aforementioned combination of Zhang, Gasper, and Cass to provide a method of encoding that is superiorly robust against attacks, and can embed a large

amount of information (Hayashi, page 1, paragraphs 12-13). The suggestion for doing so was given by Cass, in col 15, ln 44-46, which teaches that message data may include error correction codes and any other such data as might be needed to facilitate decoding, such as a parity bit. Therefore, it would have been obvious to combine Hayashi with the aforementioned combination of Zhang, Gasper, and Cass to obtain the invention as specified in claim 12.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boswell (U.S. 5,559,933), Zhang et al. (US 6354630), and Gasper et al. (U.S. 5,919,730), hereafter referred to as Boswell, Zhang, and Gasper.

Regarding claim 15, Boswell teaches an archiving printer capable of printing a document and storing and reprinting the document as document data in an archive (Boswell, column 5, lines 1-4). The printing system taught by Boswell further teaches a recording section for recording archive management information on a document (Boswell, column 5, lines 13-22). Boswell also teaches a knowing section for knowing the archive management information on the printed document (Boswell, column 25, lines 34-42). Boswell does not disclose expressly a printing system for printing information in a state that is invisible to the human eye, Boswell does not teach a blank area extracting section that extracts a location of at least one blank area in a page image of a document, wherein said location of said blank areas are different from location of a visible image, nor does Boswell does not teach a reading section for reading out the information being recorded in an invisible manner. Zhang teaches a

printing system comprising a blank area extraction section that extracts a location of at least one blank area in a page image of a document (Zhang, fig 1, print control symbol #214 separate from informational content #210. Informational content is visible to the naked eye), wherein said location of said blank areas are different from location of a visible image (Zhang, col 4, ln 53-60, wherein blank portions of document are extracted from page, with location separated from the informational content of the printed matter). Gasper teaches a method of recording information invisible to the human eye in a document (Gasper, column 3, lines 51-56). Gasper also teaches a reading section capable of reading the invisible information being recorded (Figure 2 of Gasper, showing a scanner (22), a digital image processing unit (24) comprising of a keyboard (26) and monitor (28), and a printer (30) to form hard copy prints, also column 5, lines 31-46).

Boswell, Zhang, and Gasper are combinable because they are from the same field of endeavor, namely printing systems and archiving information for reprinting. At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the blank area extraction section to record invisible information of Zhang and the and invisible information recording as taught by Gasper, as well as the reading section from Gasper to read the information recorded in the invisible manner with the printing system recording the archive management information taught by Boswell. The motivation for doing so would have been to control when, where, and how print files are to be printed (Boswell, column 4, lines 26-28), to encode information concerning the printed matter, such as sequencing information (Zhang, col 3, ln 59-62), as well as to

maintain the high quality and utility of the document (Gasper, column 3, lines 59-62). Therefore, it would have been obvious to combine Zhang and Gasper with Boswell to obtain the invention as specified in claim 15.

Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boswell (U.S. 5,559,933), Zhang et al. (US 6354630), Gasper et al. (U.S. 5,919,730), and Ur (US 5568550), hereafter referrer to as Boswell, Zhang, Gasper and Ur.

Regarding claims 16 and 17, which depend from claim 15, the combination of Boswell, Zhang, and Gasper teaches a printing system including an archiving printer which prints a document upon request, at the same time storing the document into an archive, and upon a receipt of a reprint request, reprints the document, the archiving printer comprising a blank area extraction section, a recording section, a reading section, and a knowing section, as explained above in the rejection of claim 15. The combination of Boswell, Zhang, and Gasper teaches a recording section which embeds (Boswell, col 16, ln 18-25, as per the teachings of Zhang and Gasper, the archive information of Boswell may be embedded in the invisible information format of Zhang and Gasper) and records (Boswell, column 16, lines 34-40, as per the teachings of Zhang and Gasper, the archive information of Boswell may be recorded in the invisible information format of Zhang and Gasper) the archive management information of the document at the time of printing in an invisible state. Additionally, the combination of Boswell, Zhang, and Gasper further comprises a reading section wherein the reading

section includes an optical scanning section for scanning at least a part of the document (Gasper, col 5, ln 32-35, scanner scans in document. Also see Zhang, col 16, ln 46-49, wherein video scanners read portions of the document for processing). The combination of Boswell, Zhang, and Gasper does not disclose expressly a printing system further comprising recording the invisible information into a plurality of locations of blank areas. Ur, however, teaches a printing system for printing invisible information in a plurality of blank areas on a document (Ur, fig 2, invisible information is recorded in a plurality of blank locations #27sub1, #27sub2, and #27sub5).

Boswell, Zhang, Gasper, and Ur are combinable because they are from a similar field of printing systems and providing encoded information. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the printing system of Ur comprising recording identical invisible information in a plurality of blank locations with the combination of Boswell, Zhang, and Gasper teaching a printing system comprising an archiving printer which prints a document upon request, at the same time storing the document into an archive, and upon a receipt of a reprint request, reprints the document, the archiving printer comprising a blank area extraction section, a recording section, a reading section, and a knowing section. The motivation for doing so would have been to print the invisible information in a plurality of locations to provide for redundancies in the event of a printer "smear," and to reduce the likelihood of post-printing annotations from obscuring the invisible information (Ur, col 2, ln 20-30). Therefore, it would have been obvious to combine Ur with the combination of Boswell, Zhang, and Gasper to obtain the invention as specified in claims 16 and 17.

Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al. (US 6354630), Gasper et al. (U.S. 5,919,730), and Ur (US 5568550), hereafter referred to as Zhang, Gasper, and Ur.

Regarding claims 20 and 21, which depends from claim 1, the combination of Zhang and Gasper teaches an invisible information recording method comprising extracting a location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to a naked eye, as explained above in the rejection of claim 1. Zhang additionally teaches extracting rectangular areas to record the invisible information thereon (Zhang, col 10, ln 61-64, wherein the invisible information may be encoded in a rectangular M x N fashion, allowing for both horizontal or vertical arrangement. See also table III of Zhang in col 11, wherein various horizontal and vertical arrangements are shown). The combination of Zhang and Gasper does not disclose expressly an invisible information recording method wherein said extracting comprises extracting a plurality of blank areas from said sheet of paper. Ur, however, teaches a method of extracting a plurality of blank areas for said sheet of paper (Ur, fig 2, invisible information is recorded in a plurality of blank locations #27sub1, #27sub2, and #27sub5).

Zhang, Gasper, and Ur are combinable because they are from a similar field of endeavor of invisible information encoding. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the invisible information

method of Ur comprising extracting a plurality of blank locations on a page with the invisible information recording method of Zhang and Gasper comprising extracting a rectangular location of a blank area of a page separate from a visible image, recording a digital image on said location, wherein said digital image comprises information in the form of pixels so sized as to be invisible to a naked eye and at a print density invisible to a naked eye. The motivation for doing so would have been to print the invisible information in a plurality of locations to provide for redundancies in the event of a printer "smear," and to reduce the likelihood of annotations from obscuring the invisible information (Ur, col 2, ln 20-30). Therefore, it would have been obvious to combine Ur with the combination of Zhang and Gasper to obtain the invention as specified in claims 20 and 21.

Regarding claim 22, which depends from claim 21, the combination of Zhang, Gasper, and Ur teaches an invisible information recording method wherein said recording the digital signal comprises recording a copy of at least a portion of said information into the at least one other location of said plurality of locations of said blank areas (Ur, col 4, ln 3-5, wherein redundant information is recorded into a plurality of information on the sheet).

Response to Arguments

Applicant's arguments, see page 21, ln 18-20, page 22, ln 8-14 and 21-24, page 23, ln 15-20, page 24, ln 14-18, page 25, ln 12-17, page 26, ln 1-6, and page 27, ln 3-22, filed September 28, 2005, with respect to the rejection(s) of claim(s) 1-17under 35

U.S.C 102(b) and 103(a), respectively, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Zhang et al, (US 6354630).

Applicant's arguments filed September 28, 2005, with respect to claim 11 (page 24, ln 22-23, and page 25, ln 1-2), have been fully considered but they are not persuasive. Applicant states that Hayashi does not disclose an invisible information recording method wherein at least one of the significant blocks is a recording unit which always represents "1." However, it is well known in the art that a complete signal always comprises a "1." Additionally, see Zhang, col 6, ln 65-67, wherein a "framing bit" is always a "1." Also see Zhang, col 7, ln 3-7, wherein an odd parity check is used for error detection, requiring at least one element to be a "1."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon J. Murphy whose telephone number is (571) 272-5945. The examiner can normally be reached on M-F, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dillon Murphy

DOUGLAS Q. TRAN
PRIMARY EXAMINER